



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------|-------------|----------------------|-------------------------|------------------|
| 10/714,410 | 11/14/2003 | Stephan Oberle | Westphal.7377 | 2025 |
| 7590 02/06/2006 | | | EXAMINER | |
| Samuels, Gauthier & Stevens LLP | | | KRAUSE, JUSTIN MITCHELL | |
| Suite 3300 | | | ART UNIT | |
| 225 Franklin Street | | | PAPER NUMBER | |
| Boston, MA 02110 | | | 3682 | |

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,410

Applicant(s)

OBERLE ET AL.

Examiner

Justin Krause

Art Unit

3682

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: worm 2 and worm gear 1 and region of engagement 13 (description of fig 6 on page 9 of specification), these are believed to be 408, 402, 600 respectively. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1-12 objected to because of the following informalities: The reference numerals within the claims are inconsistent with the reference numerals in the drawings. Appropriate correction is required.

In claim 1, "one gear to the other gear" is ambiguous. For consistency in the claim language, examiner suggests changing the phrase to --the gear to the mating gear--.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2 and 3, the word "preferably" is indefinite because it does not permit the absolute definition of a distinct arrangement. Also in claim 2, "piecewise at least approximately equal curvature" is unclear and appears to be grammatically incorrect.

In claim 7, "lower strength" is indefinite because it is unclear in what aspect the worm is stronger than the worm wheel. The term strength has many definitions and it is not clear which aspect of strength is being referenced.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claim 1-8, 10 and 12, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Shimizu et al (US Patent 6,543,569).

Shimizu discloses a power assisted steering system having a gear mechanism (32) coupled to a steering column (12) with a gear (33) and a mating gear (34), each having teeth via which they engage each other, wherein the effective profiles of the tooth faces of the gear and mating gear are made such that a linear contact over the height of the teeth comes about when the teeth engage. (Fig 1)

Regarding claims 2-5 and 12, the tooth profile is a circular arc (non-involute) and each tooth has a convex and concave region, the concave region is disposed in a region adjoining a tooth base and the convex region is disposed in a region adjoining a tooth tip. (Col 12, line 62-Col 13, line 57 and Figures 8a-8d).

Regarding claim 6, the gear mechanism comprises a worm gear mechanism that includes a worm gear (113) and a worm (112).

Regarding claim 7 and 8, the worm is made from metal and the worm gear is made using resin or plastic, which is lower strength than the metal worm. (Col 11, lines 28-31)

Regarding claim 10, the worm wheel is cylindrical (Fig 6).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Pickles (US Patent 2,760,381).

Shimizu discloses all of the claimed subject matter as described above.

Shimizu does not disclose the tooth thickness of the teeth of the worm gear is greater than that of the teeth of the worm.

Pickles teaches a worm and worm wheel arrangement where the worm gear is a weaker material than the worm and the thickness of each tooth on the worm wheel being greater than one half the circular pitch and the thread of the worm being less than one half the circular pitch, the increased tooth thickness increases the strength of the weaker gear wheel while not increasing the amount of unnecessary material on the worm. (Col 1, lines 60-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the larger tooth thickness on the worm gear made of weaker material as taught by Pickles into the device of Shimizu, the motivation would

have been the increase in strength of the weaker worm gear while not adding unnecessary material to the worm.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu and Pickles in view of Scott (US Patent 2,279,414).

Shimizu discloses all of the claimed subject matter as described above.

Shimizu does not disclose the worm made globoidal in shape.

Scott teaches a globoidal worm engaging a worm wheel, the globoidal shape making it possible to increase the possible bearing between the thread flanks of the worm and tooth flanks of the worm wheel when carrying a heavy load. (pg 1, lines 5-11)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Shimizu and incorporate a globoidal shaped worm as taught by Scott, the motivation would have been to increase the possible bearing between the thread flanks of the worm and tooth flanks of the worm wheel and increase the load carrying ability.

Conclusion


11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Krause whose telephone number is 571-272-3012. The examiner can normally be reached on Monday - Friday, 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMR
2/11/06


RICHARD W. RIDLEY
PRIMARY EXAMINER
SPE Art 3682